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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named Inventor	: Mark G. Romo et al.	Appeal No.
Appln. No.:	10/784,107	
Filed :	February 20, 2004	Group Art Unit: 2874
For :	COMPENSATED VARIABLE OPTICAL ATTENUATOR	Examiner: Sarah Song
Docket No.:	R11.12-0837	

TRANSMITTAL OF CORRECTED APPEAL BRIEF (PATENT APPLICATION - 37 C.F.R. §41.37)

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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6th DAY OF April, 2007.

G G

PATENT ATTORNEY

Sir:

Transmitted herewith is the Corrected Appeal Brief in this application with respect to the Notice of Appeal filed on November 9, 2006.

The Director is authorized to charge any additional fees associated with this paper or credit any overpayment to Deposit Account No. 23-1123. A duplicate copy of this communication is enclosed.

Respectfully submitted,

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CORRECTED BRIEF FOR APPELLANTS

Mail Stop Appeal Brief-Patents Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	I HEREBY CERTIFY THAT THIS PAPER IS BEING SENT BY U.S. MAIL, FIRST CLASS, TO THE COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, THIS 6th DAY OF April, 2007. PATENT ATTORNEY

Sir:

This is an appeal from a Final Office Action dated July 27, 2006 in which a rejection of claims 1-25 and 37-39 was made final. The appellants respectfully submit that claims 1-25 and 37-39 are allowable, and request that the Board reverse the rejection of these claims and find instead that claims 1-25 and 37-39 are in condition for allowance.

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REAL PARTY IN INTEREST

Rosemount Inc., a corporation organized under the laws of the state of Delaware, and having offices at 12001 Technology Drive, Eden Prairie, Minnesota 55344, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment filed with the patent application and recorded on Reel 015019, Frame 0731.

NO RELATED APPEALS OR INTERFERENCES

There are no known related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF THE CLAIMS

Claims 1-39 were originally presented. The appellants canceled claims 26-36 in an amendment in response to a restriction requirement, and amended claim 1 in a later amendment. Claims 1-25 and 37-39 were all rejected in the Final Office Action, and are the subject of the present appeal.

STATUS OF AMENDMENTS

The appellants have not amended the claims since prior to the Final Office Action, which included acknowledgement of that last amendment.

SUMMARY OF CLAIMED SUBJECT MATTER

1. Introduction

The pending claims are directed to an electrically variable optical attenuator (claims 1-11) and an electrically variable optical attenuator system (claims 12-25, 37-39). Optical attenuators may be used to control the intensity and power of optical signals for network devices, for example.

2. Brief Background

Optical networks, e.g., telecommunications networks, are formed of numerous devices. Switches, routers, couplers, (de)multiplexers, and amplifiers are commonplace in networks. These devices must be compatible with one another to function properly, i.e., they must be able to receive and transmit compatible signals. For some networks, this compatibility requires that network devices operate on signals within a specified intensity range - a constraint that makes network power level management quite important.

Systems designers often rely upon optical attenuators to properly manage network power levels. These attenuators can be stand-alone or integrated with other devices to controllably set signal intensities. Intensity can be controlled between serial devices like amplifier stages, between parallel devices like switching banks, and even within a single optical device, like an attenuator integrated into an existing wavelength division multiplexing (WDM) device to normalize channel intensities.

For many applications, attenuators are fabricated by suppliers that, in turn, supply optical device manufacturers who assemble the network appliances (switches, routers, etc.). Since different networks may be optimized for different signal

intensity levels, suppliers will often make a batch of identical optical devices and then tailor some of them to meet the needs of the device manufacturer, i.e., the particular network.

Variable optical attenuators (VOAs), where the amount of attenuation is adjustable, are known. VOAs are commonly formed of a blocking structure (like a movable absorber or partially reflecting structure) disposed in a free space region between an input waveguide and an output waveguide. The position of the blocking structure within the free space region determines the amount of attenuation. Shutters, mirrors, prisms, and even liquid crystal structures have been used as blocking structures.

Another attenuation method used misaligns fibers via a mechanical spring, a technique that results in significant temperature-dependent instabilities. Axial separation between fiber ends has also been proposed, though the methods require a large displacement and expensive moving parts.

In other forms, people have developed continuous wave attenuation devices formed of two waveguides twisted and fused together to form a bulk switching/attenuation region. Some of these devices also use thermal elements for selective switching and attenuation control. Still others have developed VOAs that use a Faraday rotator or pockel cell-like structure to attenuate based on polarization state.

While these techniques may be useful for some applications, they introduce undesirable manufacturing costs and complexity of operation. Furthermore, the devices are bulky and incompatible with networking environments where space is a major concern. They are also difficult to install within a network and, therefore, can result in substantial network downtime or slowdown. Perhaps even more important, many of these known VOA devices introduce a substantial amount of unintentional and undesirable loss. For example, insertion loss and polarization dependent loss (PDL) greatly limit operation of known VOA

devices. Further, known VOAs also exhibit stability problems malfunctioning if moved or jostled during operation. Additionally, changes in temperature in the VOAs can introduce undesirable effects. Finally, as VOA's provide finer control of attenuation, error from any source will become increasingly undesirable.

Some VOA devices utilize signal sampling and feedback to provide precise attenuation control. However, signal sampling methods are costly are require significant space for implementation. Moreover, sampling transducers can be affected by changes in temperature such that temperature can still affect attenuation levels of systems that employ sampling transducers.

It was therefore found desirable to have VOAs that are not overly bulky, do not use extra components, such as partially reflecting elements, sampling transducers or thermal switches, are lower in cost to fabricate, and operate with less loss and higher stability.

3. The Claimed Subject Matter

Claims 1, 12 and 37 are the only independent claims on appeal. Claim 1 provides an electrically variable optical attenuator 106, 200, 200', 300, 400, 500 such as shown in Figs. 1, 2A, 4A, 5, 9 and 10, respectively, having a pair of waveguides 202, 203 (Fig. 2A); 320, 330 (Fig. 5); 420 (Fig. 9) and a sensor 710. Each waveguide 202, 203; 320, 330; 420 of the pair has a terminus 206, 209 (Fig. 2A); 321, 331 (Fig. 5); 421 (Fig. 9). At least one terminus 206, 209; 321, 331; 421 is movable relative to the other terminus upon urging from an electrically driven actuator 110 (Fig. 1); 218, 226 (Fig. 2A); 314, 316, 344, 346 (Fig. 5); 422, 424, 426, 428 (Fig. 9); 516, 518, 520 (Fig. 10). A sensor 710 (Fig. 12) is disposed relative to the pair of waveguides 202, 203; 320, 330; 420 to sense a variable that

affects attenuation, and provide a sensor output related to the variable.

Claim 12 provides an electrically variable optical attenuator system having a pair of waveguides 202, 203; 320, 330; 420, a sensor 710 and a controller 108 (Fig. 1. Each waveguide 202, 203; 320, 330; 420 of the pair has a terminus 206, 209; 321, 331; 421. At least one terminus 206, 209; 321, 331; 421 is movable relative to the other terminus upon urging from an electrically driven actuator 110; 218, 226); 314, 316, 344, 346; 422, 424, 426, 428; 516, 518, 520. A sensor 710 is disposed relative to the pair of waveguides 206, 209; 321, 331; 421 to sense a variable that affects attenuation, and provide a sensor output related to the variable. A controller 108 is adapted to compensate an attenuation level based on the sensed variable.

Claim 37 provides an electrically variable optical attenuator system having a pair of waveguides 206, 209; 321, 331; 421 and a controller. Each waveguide 206, 209; 321, 331; 421 of the pair has a terminus 206, 209; 321, 331; 421. At least one terminus 206, 209; 321, 331; 421 is movable relative to the other terminus upon urging from an electrically driven actuator 110; 218, 226; 314, 316, 344, 346; 422, 424, 426, 428; 516, 518, 520. The controller 108 is adapted to receive a value of an anticipated parameter, and to compensate an attenuation level based on the anticipated parameter.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Each of the following grounds of rejected are believed to present separate questions that are independently reviewable on appeal as to their respective claims:

1. Whether claims 1 and 12 are patentable under 35 U.S.C. 102 over U.S. patent application no. 2003/0012545 A1 of Bellman et al. (hereinafter "Bellman").

2. Whether claim 37 is patentable under 35 U.S.C. 102 over Bellman.

3. Whether claims 2-11, 13-25, 38, and 39 are patentable under 35 U.S.C. 103 over Bellman in combination with unreferenced knowledge in the art.

ARGUMENT

1. Introduction: Claims 1-25 and 37-39 Should Be Allowed

With this appeal, the appellants respectfully request that the Board reverse the rejection of claims 1, 12, and 37 under 35 U.S.C. 102(e), due to the lack of anticipation or suggestion of these claims by the Bellman reference, as discussed below. The appellants further request that the Board reverse the rejection of claims 2-11, 13-25, 38, and 39 under 35 U.S.C. 103(a), due to the lack of suggestion of these claims by the Bellman reference whether or not combined with general knowledge in the art, as also discussed below.

The Bellman reference, whether or not combined with knowledge in the art, fails to anticipate or render obvious claims 1-25 and 37-39 of the present invention due to the genuine inventiveness and the valuable new and unobvious advantages conferred by embodiments of the present invention, of the kind the patent system was established to promote. The appellants respectfully submit that claims 1-25 and 37-39 are deserving of

allowance, and request that the Board find likewise, in light of the following remarks.

2.1. The rejection of claims 1, 12, and 37 does not comply with the law of novelty

Claims 1, 12, and 37 were rejected with the assertion that they were anticipated Bellman. However, these claims define embodiments that are indeed novel with respect to Bellman, as illustrated below, because Bellman can be shown not to have disclosed or suggested all the elements of any of these claims.

2.2. The Law of Novelty

35 U.S.C. 102 mandates that a claimed invention must not be anticipated by a prior art patent or publication, to be patentable. A single reference must essentially disclose every element of a claim to anticipate the claim under §102. *Verdegaal Bros. v. Union Oil Co. of California,* 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). A supplementary reference is only capable of playing a supporting role by elaborating on the enablement, meaning, or inherent subject matter of the primary reference. *In re Donohue,* 226 USPQ 619 (Fed. Cir. 1985); *In re Baxter Travenol Labs.*, 21 USPQ2d 1281 (Fed. Cir. 1991); *Continental Can Co. USA v. Monsanto Co.*, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991).

2.3. The rejection of claims 1 and 12 does not comply with the law of novelty: The prior art does not anticipate every element of claims 1 or 12

The rejection of claim 1 was based on the purported disclosure of its subject matter in Bellman. However, claim 1

recites an invention that is novel and very different from Bellman.

For example, the Office Action asserts that the feedback system of Bellman receives an attenuation signal and outputs the information to control the displacement, with reference to paragraph 49, and that this allegedly anticipates a sensor disposed relative to the pair of waveguides to sense a variable that affects attenuation, and to provide a sensor output related to the variable. However, what Bellman discloses is that the feedback system may receive an attenuation signal that indicates the level of attenuation needed and a power signal that indicates the current power transmitted to the variable optical attenuator (¶49). Power signals from the input and output lensed fibers may be compared to determine if the desired level of attenuation is achieved. If not, the feedback system may further determine the amount by which the lensed fibers should be displaced to achieve the desired level.

The attenuation signal of Bellman is therefore merely the original control signal, and does not sense a variable that affects attenuation. The only feedback signal in Bellman is due to comparing the difference between power signals from the input and output lensed fibers. This difference in power does not affect attenuation, but rather is affected by attenuation. On the contrary, claim 1 recites, in part, a sensor disposed relative to the pair of waveguides to sense a variable that affects attenuation, and provide a sensor output related to the variable, which stands in sharp contrast to merely sensing variables that are affected by attenuation.

The Office Action identified the attenuation signal itself as the sensed variable. This is inconsistent with the specific language of independent claims 1 and 12 which sense a variable that affects attenuation. The substance of this distinction is emphasized when one considers that a number of

variables, which may be each sensed individually, may affect the attenuation level itself. For example, certainly the positioning of the waveguides affects attenuation. However, the temperature of the variable optical attenuator may also affect attenuation. The Bellman system merely measures attenuation and attempts to adjust it as desired. In distinct contrast, embodiments of claim 1 and 12 sense one or more variables that affect attenuation which facilitates better compensation for independent variables.

Bellman therefore lacks disclosure of a sensor disposed relative to the pair of waveguides to sense a variable that affects attenuation, and provide a sensor output related to the variable. Bellman therefore does not disclose every element of claim 1, and does not anticipate claim 1 under §102.

The rejection of claim 12 was based on the purported disclosure of its subject matter in Bellman, similarly to claim 1. However, claim 12 includes overlapping subject matter with claim 1, and is not anticipated by Bellman for the same reasons discussed above with reference to claim 1.

2.4. The rejection of claim 37 does not comply with the law of novelty: The prior art does not anticipate every element of claim 37

Claim 37 was also rejected under §102 with reference to Bellman, without differentiation from claims 1 and 12. Claim 37 is not anticipated by Bellman for the same reasons as discussed above with reference to claim 1, while claim 37 also includes substantial additional subject matter that was never addressed in the rejection thereof. For instance, claim 37 includes the element of "a controller adapted to receive a value of an anticipated parameter, and to compensate an attenuation level based on the anticipated parameter".

It was asserted in the Office Action that Bellman discloses a controller adapted to compensate an attenuation level based on the sensed variable (citing ¶0049, lines 6-9). However, the cited portion merely provides, "A feedback system can be provided to control the operation of the actuators such that the lensed fibers 4, 6 are displaced by an amount corresponding to the desired level of attenuation." In contrast, claim 37 requires that the controller be adapted to receive a value of an anticipated parameter, and to compensate an attenuation level based on the anticipated parameter. There is simply no discussion in the Office Action of the controller receiving a value of an anticipated parameter, nor the controller compensating the attenuation level based on the anticipated parameter. Moreover, the cited portion of the Bellman reference does not teach or suggest such a feature. This provides another, independent rationale why claim 37 is not anticipated by Bellman under §102.

3.1. The rejection of claims 2-11, 13-25, 38, and 39 does not comply with the law of obviousness

Claims 2-11, 13-25, 38, and 39, were rejected with the assertion that they were rendered obvious by Bellman combined with what was well-known in the art. However, these claims define embodiments that are not obvious with respect to Bellman and the knowledge in the art, as illustrated below. In particular, these claims are not obvious due to Bellman and the knowledge in the art because Bellman and the knowledge in the art did not teach or suggest every element of these claims; and because motivation to combine the elements of the claims has not been demonstrated.

3.2. The Law of Obviousness

To determine whether a claim is obvious, the scope and contents of the prior art at the time the invention was made must first be determined. *Graham v. John Deere*, 148 USPQ 459 (S.Ct. 1966). Only references from analogous arts may be considered to evaluate obviousness. *In re Oetiker*, 24 USPQ2d 1443 (Fed. Cir. 1992). This means references that are either from the same field or that are reasonably pertinent to the particular problem to be solved, or that would have logically commended themselves to the inventor's attention in considering the problem to be solved. *In re Oetiker; In re Clay*, 24 USPQ2d 1443 (Fed. Cir. 1992).

Once the prior art is properly defined, the differences between the claimed invention as a whole and the prior art as a whole are evaluated. *Graham v. John Deere; Hodosh v. Block Drug Co., Inc.*, 229 USPQ 182 (Fed. Cir. 1986)(Rich, C.J.). This first requires construing the claims, according to the broadest reasonable meaning that the claim language would have to a person of ordinary skill in the art at the time the invention was made. *Phillips v. AWH Corp.*, 75 USPQ2d 1321 (Fed. Cir. 2005)(en banc)(Mayer, J. and Newman, J., dissenting). The test is not whether the individual differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious or not. *Stratoflex, Inc. v. Aeroquip Corp.*, 218 USPQ 871 (Fed. Cir. 1983).

This further includes three requirements to make a prima facie case for obviousness: there must have been an objective suggestion or motivation to combine the references, without impermissible hindsight; there must have been a reasonable expectation of success; and the references must have taught or suggested every limitation of an individual claim. *Hodosh v. Block Drug Co., Inc.; In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991); *In re Royka*, 180 USPQ 580 (CCPA 1974). If an

independent claim is not shown to be obvious, any claim dependent on it, because it incorporates all the limitations of the parent claim along with additional limitations, is also not be shown to be obvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988).

A motivation, suggestion, or teaching must have existed that might have prompted a person of ordinary skill in the art to make a claimed combination, given the knowledge evident in the prior art and faced with the general problem confronted by the inventor. *In re Kahn*, 78 USPQ2d 1329 (Fed. Cir. 2006). The suggestion or motivation for the desirability of combining the elements from the references may come from either the explicit teaching of the prior art, from the general knowledge of persons of ordinary skill in the relevant art, or from issues inherent to the nature of the problem to be solved. *In re Rouffet*, 47 USPQ2d 1453 (Fed. Cir. 1998); *In re Kotzab*, 55 USPQ2d 1313 (Fed. Cir. 2000); *Alza v. Mylan*, 80 USPQ2d 1001 (Fed. Cir. 2006); *Ruiz v. A.B. Chance Co.*, 69 USPQ2d 1686 (Fed. Cir. 2004); *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, -- USPQ2d --, No. 06-1088 (Fed. Cir. October 3, 2006). Whichever of these sources of motivation is used, the motivation must be demonstrated by a factual inquiry of objective evidence and specific findings of fact; motivation cannot be resolved based on subjective belief and unknown authority. *In re Lee*, 61 USPQ2d 1430 (Fed. Cir. 2002). This proper evaluation of whether there was objective motivation to combine is particularly important because most, if not all, patentable ideas involve combination of known elements. *Intel Corp. v. U.S. Int'l Trade Comm'n*, 20 USPQ2d 1161, 1179 (Fed. Cir. 1991). Motivation to combine elements from different references does not occur where the references teach away from their combination or that would discourage a person of ordinary skill in the relevant art from considering the combination. *Ex parte Grasselli*, 231 USPQ 393 (Bd.App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984). Only if these

conditions for a prima facie showing of obviousness are met, does the burden shift to the applicant to show that the claimed invention is not obvious. *In re Rinehart*, 189 USPQ 143 (CCPA 1976). (Cf. *Teleflex, Inc. v. KSR Int'l Co.*, 119 Fed. App'x 282, 287 (Fed. Cir. 2005) (unpublished), *cert. granted*, -- S. Ct.--, 2006, WL 1725628 (U.S.).)

The ordinary skill in the art is also evaluated, to determine whether the differences between the claimed invention and the prior art would have been obvious to one of ordinary skill in the art at the time the invention was made; and any relevant secondary evidence is considered. *Graham v. John Deere; Hodosh v. Block Drug Co., Inc.*

3.3. The rejection of claims 2-11, 13-25, 38, and 39 does not comply with the law of obviousness: The prior art does not teach or suggest every element of claims 2-11, 13-25, 38, or 39

Claims 2-11, 13-25, 38, and 39, were rejected with the assertion that they were rendered obvious by Bellman combined with what was well-known in the art. However, these claims define embodiments that are not obvious with respect to Bellman and the knowledge in the art, as illustrated below. In particular, these claims are not obvious due to Bellman and the knowledge in the art because Bellman and the knowledge in the art did not teach or suggest every element of these claims; and because motivation to combine the elements of the claims has not been demonstrated.

First, each of claims 2-11, 13-25, 38, and 39 is dependent on one of claims 1, 12, and 37. Following the discussion above, claims 1, 12, and 37 have been shown to include subject matter that is not taught or suggested by Bellman; nor has it been argued that the subject matter of those independent claims is disclosed or rendered obvious by the general knowledge

in the art. Each of these dependent claims is therefore not shown to be obvious in the Office Action, because of the novel and non-obvious subject matter they each incorporate by their respective dependency on one of claims 1, 12, or 37.

As to the subject matter unique to the dependent claims, it is conceded in the Office Action that Bellman does not expressly disclose the various types of sensors, anticipated parameters, the controller including a memory containing a look-up table, or essentially any of the subject matter unique to any of the dependent claims. However, this concession is followed by summarily concluding that all of these various elements are simply well known in the art, and that this renders each of these claims obvious. For example, section 8 of the Office Action reads, in part:

> Sensors for sensing an anticipated parameter, such as temperature sensors (including variable capacitor devices and resistance temperature devices), wavelength sensors, acceleration sensors, and vibration sensors are well known in the art. Therefore, it would have been obvious one having ordinary skill in the art at the time the invention was made to provide any of the various sensors in the device of the Bellman et al. for the purpose of evaluating the efficacy of the attenuator of Bellman et al. and providing proper feedback control to obtain the desired attenuation, and since Applicant has not disclosed that the particular sensors/sensed parameter solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with any type of sensor. (Office Action, §8)

Quite simply, such a blanket fiat that all of a wide variety of subject matter is known in the art, in some unreferenced context, and that this renders the claims containing those elements obvious, does not satisfy the burden of analysis under the patent statute. Appellants respectfully submit that such a conclusory declaration as this does not suffice to establish whether a claimed invention is patentable. The failure

to adduce a single reference to demonstrate any one element of the subject matter of claims 2-11, 13-25, 38, and 39 in any relevant context to those claims, speaks revealingly to the question of whether those claims are obvious, to the effect that, in fact, they are not.

Claims 2-11, 13-25, 38, and 39 are also not shown to be obvious, even if their individual elements had been pointed out in the prior art, because a motivation to combine the elements has not been demonstrated. Some of the claims are alleged to be obvious due to a motivation wherein, in part,

> ...it would have been obvious one having ordinary skill in the art at the time the invention was made to provide any of the various sensors in the device of the Bellman et al. for the purpose of evaluating the efficacy of the attenuator of Bellman et al. and providing proper feedback control to obtain the desired attenuation... (Office Action, §8)

Claims 20-22 are alleged to be obvious due to a motivation wherein, "It would have been obvious, to one having ordinary skill in the art at the time the invention was made to provide the controller containing the claimed memory for the purpose of simplifying the control process" (Office Action, §9). In this latter case, it is not indicated in the Office Action how the provision of a controller containing the claimed memory would simplify the control process. In both cases, the argument in the Office Action does not identify motivation to combine out of an explicit suggestion in the prior art, the knowledge of those in the art, or the nature of the problem to be solved, as shown by a factual inquiry into objective evidence. Rather, the argument identifies the utility of the claimed combination as the source of motivation, without any differentiation from recognizing such utility in hindsight based on the present application. Relying on a recognition of a combination's utility as motivation cannot be

proper, because it would paradoxically lead to the impossible result that any subject matter that satisfies the utility requirement of 35 U.S.C. 101 would be obvious, and anything that is not obvious would fail the utility requirement, meaning that nothing could ever be patentable.

Accordingly, the appellants respectfully submit that the Office Action did not adhere to the legal requirements for demonstrating motivation, and did not set forth a sufficient *prima facie* case of obviousness with respect to claims 2-11, 13-25, 38, and 39. Accordingly, the appellants respectfully submit that claims 2-11, 13-25, 38, and 39 are allowable over Bellman and the knowledge in the art.

CONCLUSION: CLAIMS 1-25 and 37-39 SHOULD BE ALLOWED

In conclusion, the appellants respectfully submit that claims 1-25 and 37-39 are allowable over Bellman and any general knowledge in the art, for at least the several respective rationales laid out above. Thus, the appellants respectfully request that the Board reverse the Final Office Action and find that claims 1-25 and 37-39 are presently in condition for allowance.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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BFE.

Appendix A: Claims On Appeal

1. An electrically variable optical attenuator comprising:

a pair of waveguides, each having a terminus, wherein at least one terminus is movable relative to the other terminus upon urging from an electrically driven actuator; and

a sensor disposed relative to the pair of waveguides to sense a variable that affects attenuation, and provide a sensor output related to the variable.

2. The attenuator of claim 1, wherein the sensor is a temperature sensor.

3. The attenuator of claim 2, wherein the temperature sensor is disposed proximate at least one of the waveguides.

4. The attenuator of claim 2, wherein the temperature sensor is formed integral with the attenuator.

5. The attenuator of claim 4, wherein the temperature sensor is a variable capacitor.

6. The attenuator of claim 4, wherein the temperature sensor is a resistance temperature device.

7. The attenuator of claim 2, and further comprising a second sensor disposed to sense a second variable.

8. The attenuator of claim 7, wherein the second sensor is an input wavelength sensor.

9. The attenuator of claim 1, wherein the sensor is a wavelength sensor.

10. The attenuator of claim 1, wherein the sensor is an acceleration sensor.

11. The attenuator of claim 1, wherein the sensor is a vibration sensor.

12. An electrically variable optical attenuator system comprising:

a pair of waveguides, each having a terminus, wherein at least one terminus is movable relative to the other terminus upon urging from an electrically driven actuator;

a sensor disposed relative to the pair of waveguides to sense a variable that affects attenuation, and provide a sensor output related to the variable; and

a controller adapted to compensate an attenuation level based on the sensed variable.

13. The system of claim 12, wherein the sensor is a temperature sensor.

14. The system of claim 13, wherein the temperature sensor is disposed proximate at least one of the waveguides.

15. The system of claim 13, wherein the temperature sensor is formed integral with the attenuator.

16. The system of claim 15, wherein the temperature sensor is a variable capacitor.

17. The system of claim 15, wherein the temperature sensor is a resistance temperature device.

18. The system of claim 13, and further comprising a second sensor disposed to sense a second variable.

19. The system of claim 18, wherein the second sensor is an input wavelength sensor.

20. The system of claim 12, wherein the controller includes memory containing a look-up table relating the sensed variable to attenuation.

21. The system of claim 20, wherein the look-up table is multidimensional.

22. The system of claim 12, wherein the controller includes memory containing coefficients for a function relating the sensed variable to attenuation.

23. The system of claim 12, wherein the sensor is a wavelength sensor.

24. The system of claim 12, wherein the sensor is an acceleration sensor.

25. The system of claim 12, wherein the sensor is a vibration sensor.

26-36. (Canceled)

37. An electrically variable optical attenuator system comprising:

a pair of waveguides, each having a terminus, wherein at least one terminus is movable relative to the other terminus upon urging from an electrically driven actuator; and

a controller adapted to receive a value of an anticipated parameter, and to compensate an attenuation level based on the anticipated parameter.

38. The system of claim 37, wherein the anticipated parameter is an operating temperature of the system.

39. The system of claim 37, wherein the anticipated parameter is a wavelength of light to pass through the waveguides.

Appendix B: Evidence

1. U.S. patent application no. 2003/0012545 A1 of Bellman et al., attached below; first referenced by the examiner in the first substantive Office Action, dated February 22, 2006.

Appendix C: Decisions in Related Proceedings

None.